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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,168	06/14/2002	Herbert Cermak	GKNG 1096 PCT	2971

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EXAMINER

THOMPSON, KENNETH L

ART UNIT	PAPER NUMBER
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3679

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/070,168

Applicant(s)

CERMAK, HERBERT

Examiner

Kenn Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11, 15-17, 19, 21, 23, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 12-14, 18, 20, 22, 24, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because the abstract page should not contain additional information such as the title of the invention, docket numbers, assignee data, etc. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9-11 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Krude, U.S. 5,167,584.

Regarding claim 9, Krude discloses in figures 1-11 a constant velocity universal ball joint (10). Krude discloses an outer joint part (16) with outer ball tracks (col. 4, lines 46-49) and an inner joint part (12) with inner ball tracks (24). Krude discloses torque transmitting balls (18) guided in pairs of tracks comprising one of the outer ball tracks and one of the inner ball tracks (col. 4, lines 53-55). Krude discloses an annular ball cage (14) held between the outer joint part and the inner joint part and having circumferentially distributed cage windows (38) each receiving one of the balls (18). Krude discloses the ball cage (14) comprising an inner face (34) which is internally widened (at 38) between two end apertures (fig 4, left and right openings of 4) of the ball cage (14). Krude discloses the end apertures defining an inner diameter (diameter of 32 or 33), the inner joint part defining an outer diameter (27) which is greater than the inner

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diameter of the end apertures of the ball cage (col. 6, lines 17-23 and 5-7; diametrical width 27 is larger than 31, 33 and 32). Krude discloses adjoining inner ball tracks (24) of the inner joint part (12) form webs (26) whose axial length is greater than a circumferential extension of the cage windows (38) of the ball cage (see fig. 11). Krude discloses the ball cage (14) is capable of being elastically ovalisable such that, when respective axes of the ball cage and of the inner joint part (12) intersect one another (fig 5 and 11) approximately perpendicularly upon contact between a web (26) of the inner joint part (12) and the inner face (34) of the ball cage, an opposed web of the inner joint part (12) is able to pass through an end aperture (col. 4, lines 13-20). Applicant should note that the ball cage disclosed by Krude is inherently capable of being deformed into an oval and also the method of forming the constant velocity joint is not germane to the issue of patentability of the joint itself. Therefore, this limitation has not been given patentable weight.

As to claim 10, Krude discloses the ball cage (14) is capable of being elastically ovalised such that, when respective axes of the ball cage (14) and of the inner joint part (12) intersect one another approximately perpendicularly (fig 5 and 11), the inner joint part (12) is able, by way of a smallest side projection diameter (30), to pass through an end aperture (32) of the ball cage. Applicant should note that the ball cage disclosed by Krude is inherently capable of being deformed into an oval and also the method of forming the constant velocity joint is not germane to the issue of patentability of the joint itself. Therefore, this limitation has not been given patentable weight.

As to claim 11, Krude discloses the ball cage (14) is capable of being elastically ovalised such that, when respective axes of the ball cage and of the inner joint part (12) intersect one another approximately perpendicularly (fig 5 and 11), the inner joint part (12) is able, by way of the inner diameter (31), to pass through the end aperture (32) of the ball cage. Applicant should

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note that the ball cage disclosed by Krude is inherently capable of being deformed into an oval and also the method of forming the constant velocity joint is not germane to the issue of patentability of the joint itself. Therefore, this limitation has not been given patentable weight.

As to claim 19, Krude discloses a notch (30) in a widened end portion (radial outer most area of 24) of an inner ball track (24) of the inner joint part (12), the notch extending centrally relative to a longitudinal extension of the track.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-17 and 21 are rejected under 35 U.S.C. 103(a) as being obvious over Krude, U.S. 5,167,584 in view of Jacob, U.S. 6,270,419.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in

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the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

As to claims 15-17, Krude discloses the ball cage (14). Krude does not disclose a centrally circumferentially extending deepened groove in the inner face of the ball cage. Jacob teaches in figures 3 and 6 use of a centrally circumferentially extending deepened groove (36) in the inner face (21) of the ball cage (22) to free the cage relative to the outer face of the inner part (col. 7, lines 3-7). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the ball cage disclosed by Krude to have a centrally circumferentially extending deepened groove in the inner face of the ball cage, as taught by Jacob to free the cage relative to the outer face of the inner part since the groove provides a decrease in the contact surface area between the cage and inner part thereby friction between the two is reduced.

As to claim 21, Krude discloses a notch (30) in a widened end portion (radial outer most area of 24) of an inner ball track (24) of the inner joint part (12), the notch extending centrally relative to a longitudinal extension of the track.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krude, U.S. 5,167,584 in view of Jacob, U.S. 5,221,233.

As to claim 23 Krude discloses the constant velocity joint. Krude does not disclose the joint is a counter track joint wherein pairs of tracks of first outer ball tracks and of first inner ball

tracks open in a first axial direction, and wherein pairs of tracks of second outer ball tracks and of second inner ball tracks open in the second axial direction. Jacob teaches in figure 1 use of a counter track joint wherein pairs of tracks of first outer ball tracks (6) and of first inner ball tracks (10) open in a first axial direction (left, fig 1), and wherein pairs of tracks of second outer ball tracks (7) and of second inner ball tracks (11) open in the second axial direction (right, fig 1) to increase track depth which allows the torque transmitting balls to be enveloped completely. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the joint disclosed by Krude to be a counter track joint wherein pairs of tracks of first outer ball tracks and of first inner ball tracks open in a first axial direction, and wherein pairs of tracks of second outer ball tracks and of second inner ball tracks open in the second axial direction, as taught by Jacob to increase track depth which allows the torque transmitting balls to be enveloped completely. The greater track depth achieved at the axial ends of the tracks allows a higher torque transmitting capacity at large articulation angles.

Claim 25 is rejected under 35 U.S.C. 103(a) as being obvious over Krude, U.S. 5,167,584 in view of Jacob, U.S. 6,270,41 as applied to claims 15-18 above and in further view of Jacob, U.S. 5,221,233.

As to claim 25 Krude discloses the constant velocity joint. Krude does not disclose the joint is a counter track joint wherein pairs of tracks of first outer ball tracks and of first inner ball tracks open in a first axial direction, and wherein pairs of tracks of second outer ball tracks and of second inner ball tracks open in the second axial direction. Jacob (233) teaches in figure 1 use of a counter track joint wherein pairs of tracks of first outer ball tracks (6) and of first inner ball tracks (10) open in a first axial direction (left, fig 1), and wherein pairs of tracks of second outer ball tracks (7) and of second inner ball tracks (11) open in the second axial direction (right,

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fig 1) to increase track depth which allows the torque transmitting balls to be enveloped completely. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the joint disclosed by Krude to be a counter track joint wherein pairs of tracks of first outer ball tracks and of first inner ball tracks open in a first axial direction, and wherein pairs of tracks of second outer ball tracks and of second inner ball tracks open in the second axial direction, as taught by Jacob (233) to increase track depth which allows the torque transmitting balls to be enveloped completely. The greater track depth achieved at the axial ends of the tracks allows a higher torque transmitting capacity at large articulation angles.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krude, U.S. 5,167,584 in view of Sone et al., U.S. 6,120,382.

As to claim 27, Krude discloses the inner annular faces of the inner face (34) of the ball cage (14) are in centering contact with outer faces (26) of the inner joint part (col. 6, lines 37-44). Krude is silent as to whether the joint is a fixed joint. Sone et al. teaches use of a fixed joint to provide a constant velocity joint capable of transmitting torque through a high operating angle. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the joint disclosed by Krude to be a fixed joint, as taught by Sone et al. to allow for transmission of torque through a high operating angle. It is well known that use of a fixed type constant velocity joint is a requirement in vehicles having front wheel drive to reduce the turning radius of the vehicle.

Allowable Subject Matter

Claims 12-14, 18, 20, 22, 24, 26 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose or suggest all the claimed subject matter including a longitudinally extending deepened groove in a track base of at least one inner ball track of the inner joint part.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Thomas, U.S. 6,206,785 and Takahashi et al., U.S. 3,934,429 disclose similar methods of mating an inner part to a cage.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenn Thompson whose telephone number is 703 306-5760. The examiner can normally be reached on 7:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne H Browne can be reached on 703 308-1159. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-2168.

KT .
5 Sept 2003


Lynne H. Browne
Supervisory Patent Examiner
Group 3600